SYLLABUS

PHYS 231 – Modern Physics

CRN: 41263

Spring, 2018

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## Instructor and Communication Information

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| Instructor | Dr. Jarrod Schiffbauer |
| Office | Wubben 223K |
| Phone | |
| Email | jschiffbauer@coloradomesa.edu |
| Office Hours | 11am-12pm M,W,R,F & 1pm-2pm R |
| Communications Policy | All issues pertaining to the course, materials, grades, etc. to be addressed in person. If you need an appointment outside of normal office hours, e-mail me (response typically within 24 hours M-F.) |
| Assignment Grading and Feedback | The instructor will attempt to return grades and feedback on your assignments within a week after the due date. If longer, the instructor will post an announcement in D2L. Individual exam grades will be available in D2L throughout the (homework on Sapling); individual feedback may be given in person or on student work. |

## Course Information

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| Class Time | T/R 2-3:15pm |
| Classroom | Wubben 203 |
| Prerequisites | MATH 253 (may be taken concurrently), PHYS 132, and PHYS 132L. All prerequisites require a grade of C or better. |
| General Education Requirements | |
| Drop Date | |
| Credit Hours | 3 |
| Lecture Hours | 3 |
| Lab Hours | None |
| Other Hours | **Anticipate 8 hours/week minimum outside of class for reading and homework assignments** |

## Course Catalog Description

Quantum theory in the examination of blackbody radiation, the photoelectric effect, and energy quantization of atoms. The Schrodinger wave equation used to analyze simple quantum systems. Applications drawn from atomic and molecular physics, solid-state physics, nuclear and high-energy physics, and astrophysics. Prerequisites: PHYS 132, 132L, and MATH 253 (may be taken concurrently)

## Required Text and Supplies

- Thornton and Rex, "Modern Physics for Scientists and Engineers," 4th ed.

- Bound notebook
- Scientific calculator

| GRADING | SCALE* |
|---|---|
| A | 90 -100% |
| B | 80 - 89% |
| C | 60 -79% |
| D | 50 - 59% |
| F | Under 50% |

## Methods of Evaluation/Grading Policy

| Grade Items | Percent of Final Grade |
|---|---|
| In-class exams (3) | 60% |
| Cumulative Final Exam | 10% |
| Homework assignments | 20% |
| Constructive in-class participation/notebook spot-check | 10% |

*(*A grading curve may be applied at my discretion.)*

## Assignments.

To receive credit on any problem, (1) the problem must be clearly indicated, (2)starting from fundamental assumptions and basic equations, (3) all steps must be shown, (4) numerical or symbolic final answers must be indicated clearly (boxed or circled), (5) have correct units and significant digits (when relevant), and (6) MUST occupy at least ½ notebook page and be written clearly. **I reserve the right to reject work that I deem poorly set-up, incompletely justified, difficult to follow, or difficult to read (hence grade.)** It is expected you will work with a partner, but you are responsible for turning in original work. Please keep a thorough notebook. All problems, reading assignments/suggestions, and class notes/comments are fair game for exam questions. I may spot-check notebooks for class partipation credit._

## Exams

There will be 3 in-class topical exams and 1 cumulative final exam, each designed to be completed during class time. Exams are closed-book, closed-note; you will be permitted a 5X7 note-card for reference. You may only use a scientific calculator; no phones or other electronics (phones collected prior to exams, returned with exam.)

## Course Schedule

The tentative schedule with reading assignments or activity for each day through the first exam is shown below. This may be subject to some change. You are responsible for the material given in lectures, demonstrations, as well as the relevant reading assignments indicated below. Homework problems will be assigned in-class and a running list posted on D2L. We will go over homework problems in-class on recitation days.

| Week | Tues | Thurs |
|---|---|---|
| 1 | Intro, Ch. 1, syllabus, some math. ***(not in book)*** | More math, background ***(not in book)*** |
| 2 | Ch. 3, mainly blackbody radiation | Ch. 3, mainly photoelectric effect |
| 3 | Ch. 4 | Ch. 4, intro Ch. 5 |
| 4 | Ch. 5 (~1$^{st}$ half) | Ch. 5 (~2$^{nd}$ half, review) |

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|---|---|---|
| 5 | **EXAM 1** | Go over exam, Intro Ch. 6 |

## Attendance and Class Participation Policy

Regular course attendance and active participation – including effective note-taking—is essential to your success in this course. After the first two weeks, I do not take formal attendance. You are responsible for all material and part of your course grade will depend on your constructive participation in in-class Q&A and other activities (pop quiz, group problems, etc.), as well as possible notebook spot-check.

## Course Correspondence

Matters pertaining to the course should be dealt with in-person during office hours, before/after class, or by appointment. Appointments or alternate arrangements (for example, in case of emergency) will be made via e-mail and you will receive a response within 24 hours during the working week.

## Plagiarism and Academic Integrity

Academic dishonesty is the intentional act of fraud, in which an individual seeks to claim credit for the work and efforts of another or uses unauthorized material or fabricated information in any academic exercise. Academic dishonesty also includes, but is not limited to: (1) Forgery/fabrication/falsification/plagiarism of academic documents; (2) Intentionally impeding or damaging the academic work of others; (3) Assisting others in acts of academic dishonesty; (4) Cheating in the classroom; (5) Unauthorized attendance; (6) Multiple submissions; and (7) Unauthorized collaboration. Any academic misconduct may be reported to the Department Head and Office of Academic Affairs and may result in a failing grade, suspension, or dismissal.
These policies are outlined at:

Student Code of Conduct and Conduct System

***While discussion, collaboration, and use of digital/internet resources on homework assignments are beneficial and expected, all students must turn in their own original, handwritten homework to receive credit. Students must cite any sources used outside of regular course notes and materials. I must emphasize that any form of academic dishonesty on an exam will not be tolerated under any circumstances and university sanctions will be applied to the fullest extent warranted, including immediate removal from the course with failing grade. This includes the use of unapproved resources or electronics (phones, etc.) during exams as well as more conventional forms of cheating.***

## Technology & Technology Skill Requirements

You will need to have and know how to use a scientific calculator (a graphing calculator is not necessary.) You may need to use the internet and library for additional information and topical reading beyond the regular course materials. You may need to use specialized software.

## Withdrawal Statement

Regular class attendance is expected. CMU is required by law to verify the enrollment of students who participate in Federal Title IV student aid programs and/or who receive educational benefits through other funding sources. CMU is responsible for identifying students who have not attended or logged into a class for which they are registered. At the conclusion of the first week of a semester, instructors will report any registered students who have "Never Attended" a class so that those reported students will be administratively withdrawn from that class. However, it is the student's responsibility to withdraw, using the appropriate CMU form, from any class which she/he is no longer attending or risk receiving a failing grade in that class. Student's wishing to withdraw must complete and submit the appropriate CMU form by the established withdrawal deadline.

## Supplemental Help and EAS(*)

For general help with concepts and problem-solving, you are encouraged to ask questions during lectures and recitations, come to office hours (or schedule an appointment), or you may seek tutoring. See the bullet below on the Tutorial Learning Center.
For qualified students with disabilities, reasonable accommodations will be provided in coordination with Educational Access Services (EAS.) Please meet with me during the first week of the class to make arrangements. Barry J. Rochford, the Coordinator of Educational Acces Services, can be contacted at 248-1826, bjrochford@coloradomesa.edu or in person in Houston Hall, Suite 108.

## General Student Services

- **Educational Access Services**: In coordination with Educational Access Services, reasonable accommodations will be provided for qualified students with disabilities. Please meet with the instructor

the first week of class to make arrangements. Nancy Conklin, the Coordinator of Educational Access Services, can be contacted at 248-1826, or in person in Houston Hall, Suite 108.

- **Service animal syllabus statement:** Service dogs are permitted in any areas of public access on campus. Service dogs are allowed in all classrooms and other environments used by students or other program participants with the exception of areas that for health or safety reasons exclude the presence of animals. Dogs and other animals whose sole function is to provide comfort or emotional support do not qualify as service animals under the ADA. Therapy and emotional support animals are not allowed in campus buildings, except in residence halls if the owner is a resident.
- The **Tutorial Learning Center** is a **FREE** academic service for all Colorado Mesa University students. Tutors are available on a walk-in basis for many courses. Do you have a quick question? Do you need homework clarification or feedback on a paper? Are you reviewing for a test? Help is available at the TLC! At the main campus, come to Houston Hall 113 to meet with one of our friendly peer tutors. We are open on Monday through Thursday from 8am-6pm, and Fridays from 8am-5pm. We are also open Sundays from 1pm-6pm! Tutoring at branch campuses and distance tutoring is also available. Check out the website for schedules and locations at www.coloradomesa.edu/tutoring or call 248-1392 with any questions.
- **Research Assistance at the Tomlinson Library:** Reference Librarians can assist you if you need help with research, finding print and electronic resources or citation help. The Reference Desk is on the first floor of the Tomlinson Library located on the CMU campus. And for your convenience, you can Instant Message (IM) a Reference Librarian from the Tomlinson Library home page at http://coloradomesa.edu/cmulibrary/index.html. You can also call the Reference Desk at 970-248-1860 or email at libref@coloradomesa.edu with your questions. Other resources for online students can be accessed at http://www.coloradomesa.edu/cmulibrary/ecservices.html
- **Student Services**: The Office of Student Services works to support CMU students in all aspects of college life, by offering a vast array of services, resources and programs that make each student's time at Colorado Mesa as exciting and successful as possible. Student Services works collaboratively with faculty, students, and staff to create a campus community that fosters the growth of students as strong individuals and productive citizens. To learn more, go to http://www.coloradomesa.edu/studentservices

## Student Success

A guide to student Success at CMU, can be found at
http://www.coloradomesa.edu/academics/documents/StudentSuccessatCMU_WCCC.pdf